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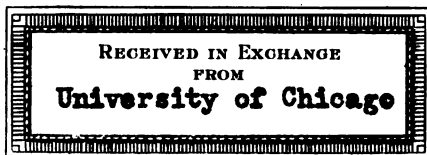
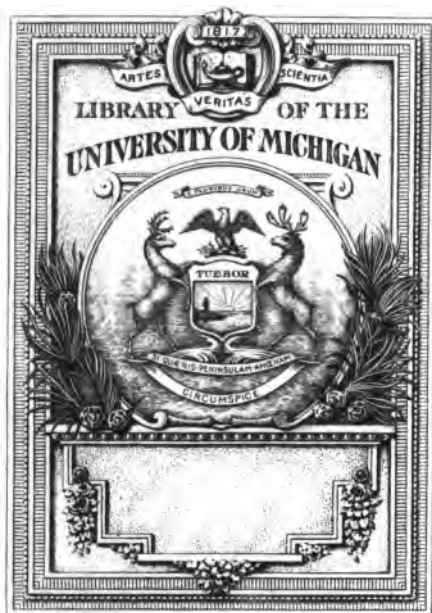
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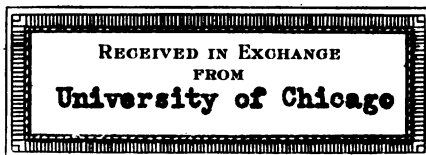
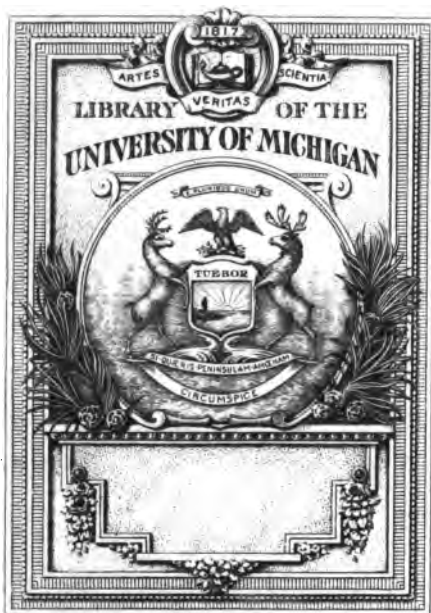
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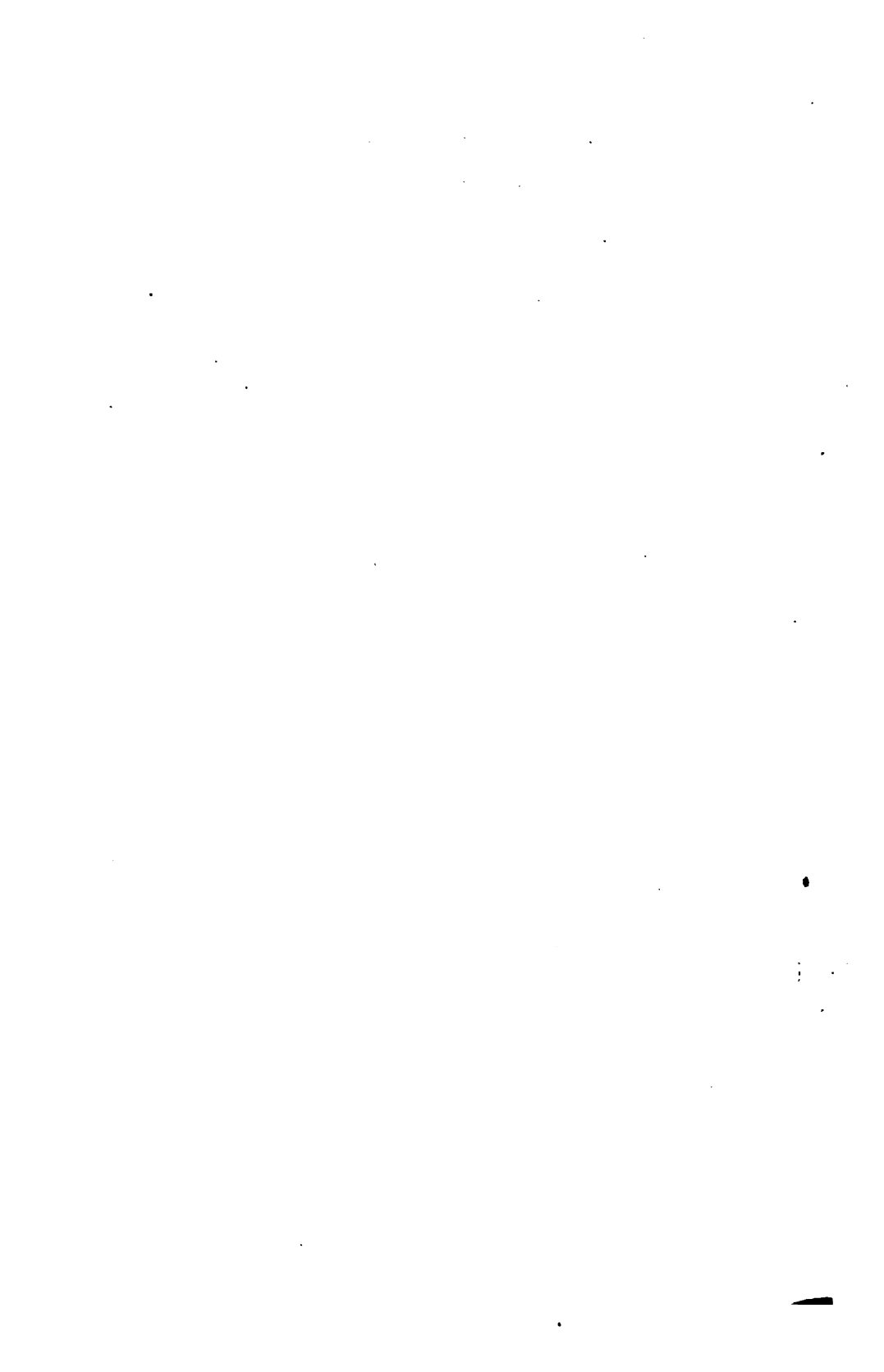
THE
HERRING FISHERIES
OF
SCOTLAND

BY
R. W. DUFF, M.P.

LONDON
WILLIAM CLOWES AND SONS, LIMITED
INTERNATIONAL FISHERIES EXHIBITION
AND 13 CHARING CROSS, S.W.

1883





and to such improvements for their development as a nautical experience of twelve years in the Navy suggests.

Now the treatment of the subject from the point of view I have indicated, necessitates a reference to statistics. I regret to say that the only reliable figures I can find are those relating to the Scotch Herring Fisheries, compiled by the Fishery Board for Scotland, and I may here remark that I think it is a matter of very great regret that no attention has hitherto been paid to the recommendation of the Sea Fisheries Commission of 1866, who say, "We think it a matter of great importance that Fishery statistics should be systematically collected. It is only by such means that the constant recurrence of the panics to which the Sea Fishery interests have hitherto been subjected can be prevented, and that any trustworthy conclusion can be arrived at regarding the effects of the modes of fishing which are in use. It is probable that the existing Coast Guard or Customs organisation may be utilised to collect statistics, as is now to some extent the case in Ireland."

The necessity for fuller information than we possess concerning our Sea Fisheries must, I feel sure, be impressed on us by the able and interesting paper read on Tuesday by Professor Brown Goode, as the result of the application of improved modes of capture and transit of fish in the United States could not have been established without the elaborate statistics he was able to put before us.

My general observations may be taken as applying to the Herring Fisheries of the United Kingdom, but for the reason I have mentioned they are made with particular reference to what is undoubtedly our most important Herring Fisheries, viz., those of Scotland.

Dealing, in the first instance, with the progress of the

Scotch Herring Fisheries I shall only take you back to the year 1810, when I find by the statistics of the Scotch Fishery Board the number of herrings cured were as follows :

	Barrels cured.	Barrels exported.
1810	90,185	35,848
1830	326,557	181,654
1850	770,698	340,255
1880	1,473,600	1,009,811

I may here mention that a barrel contains 32 gallons English Wine measure, and it is calculated that each barrel contains from 800 to 900 herrings. A barrel of salted herrings, taking the average of the different qualities, represents herrings to the value of 25s. According to this estimate the value of the herrings cured in Scotland in 1880 represents £1,842,000. It is calculated that 20 per cent. of the herrings are sold fresh, assuming the fresh herring to be only worth as much as the cured, although it is probably more valuable, the total quantity taken off the Coast of Scotland in 1880 would represent a money value of £2,210,460.* In the valuable paper prepared for this Conference by the Duke of Edinburgh, His Royal Highness estimates the money value of the fish taken off the Coast of these Islands at £7,380,000. It will thus be seen that the produce of the Scotch Herring Fisheries bears a large proportion to the total value of the fish brought to our shores.

The Herring Fishery of 1880 was the most productive ever experienced in Scotland, and it was one which enabled

* Professor Brown Goode estimates the American Oyster Fisheries as producing £2,799,790 a year, £589,330 more than the Scotch Herring Fisheries, the latter being twice as valuable as any other single American Fishery.

the Scotch curer to export a greater quantity of cured herrings to the Continent than either the Norwegians or the Dutch, who have long been the established and worthy rivals of the Scotch in the Continental markets. I find, from the statistics laid before the Herring Brand Committee of 1881, the relative quantity of herrings imported at Stettin was :

	Scotland.	Norway.	Holland.
1869 to 1874, average of 6 years	569,741	936,105	161,961
1875 „ 1880 „ 6 „	629,101	694,502	148,663

The Norwegian barrel is $\frac{1}{6}$ th less than the Scotch ; the Dutch barrel is the same size.

These figures do not, of course, represent the total export of each country. A quantity of Dutch herrings are sent up the Rhine, and Holland, like Norway and Scotland, has a considerable export trade in cured herrings with most European countries. The Baltic ports, however, take the large proportion of the Scotch and, I believe, also of the Norwegian herrings ; a comparison, therefore, of the imports at these ports may be taken as indicating the relative prosperity of the herring trade of the two countries. The demand for cured herrings in the interior of Europe may be shown by a statement of Mr. Reid, the British Vice-Consul at Stettin. Speaking of Scotch herrings imported at Stettin, he said, before the Committee of 1881 : “ We send them all round, beginning with Poland and Warsaw and the territory between Stettin and Warsaw, the south of Russia, Galicia, round by Vienna, along to Bavaria, and then as far round until we get to Magdeburg, when the imports of Hamburgh come in and compete with our offers.”

The progress of the Dutch Herring Fisheries is indicated by the statistics in the Exhibition, showing that since 1857

they have increased in value from £47,908 to £147,788 per annum.

Returning to the Scotch Herring Fisheries, I should mention that the herrings cured in 1881 (the last year for which I have reliable statistics) showed a decrease as compared with 1880, of 362,445 barrels, but an increase as compared with the average of the last ten years of 21 per cent.

Besides producing the large revenue I have referred to the Scotch Herring Fisheries give employment to 48,000 fishermen, 2,400 coopers, 18,854 salters and packers. There are 14,800 boats employed, while the value of the boats, nets, and lines is estimated at £1,500,000.

An industry conducted on so large a scale must be of great value to any country. It is difficult to exaggerate its importance to the North of Scotland, where the industries are few, and where the soil is frequently sterile and unproductive.

Professor Huxley in his opening address referred to the large proportion of food frequently taken from the sea as compared with the land. This is well illustrated by the relative products of our Northern Counties.

I once made a calculation, taking my figures from the Domesday Book, that the annual rental of the nine Northern Counties in Scotland, amounted to £1,299,704, being half a million less than the value of the cured herrings in Scotland, already referred to, in 1880, and the value of herrings cured at three stations, in the same year, on the Aberdeenshire Coast, viz.: Aberdeen, Peterhead, and Frazerburgh, exceeded the rental of the County of Aberdeen (the City of Aberdeen alone excepted) by £69,000.

The statistics I have given I think prove the national importance of the Herring Fisheries, they also show that the progress of the Scotch Fisheries, although subject to

some slight fluctuations, has been rapid and continuous. I will now consider the conditions under which they have prospered and under which the trade in cured herrings has so greatly increased.

The Herring Fisheries Commission of 1878 reports that up to 1829 it had been the policy of the legislation to encourage the Herring Fisheries by bounties, but the bounties were discontinued, Mr. McCulloch expressing an opinion that the fishermen often went to sea to catch the bounties and not the fish.

From 1829 to 1851 the Fisheries were free from Government sources of encouragement and were subject to no restrictive regulations of importance. From '51 to '67 a series of restrictive measures were passed to regulate the Fishery and to prevent the capture of herrings at certain seasons and in certain ways. Since 1867, again, when the first of the liberating Acts were passed (due in a great degree to the report of the Commission in '62, presided over by my right hon. friend in the chair), the Fisheries on the coast of Scotland have practically been free and subject to no restrictive legislation whatever.

I find that from—

	Average number of barrels cured annually.
1829-51, period of unrestricted fishing . . .	521,880
1851-68 „ restrictive legislation . . .	657,160
1868-1881 „ unrestricted fishing . . .	827,580

These figures show that the average increase per annum in 13 years of unrestricted legislation exceeded that of 17 years of restrictive legislation by 170,420 barrels.

The two systems were tried for sufficient periods to justify the conclusion of the Commissioners of '78, viz.—“That legislation in past periods has had no appreciable effect, and that nothing that man has yet done, and nothing

man is likely to do, has diminished or is likely to diminish the general stock of herrings in the sea."

If further evidence be needed in support of a policy of unrestricted fishing, it appears to me to be supplied by a consideration of the insignificant proportion of herrings captured by man as compared with that effected by agencies over which man has no control. I need say little on this point, as it was amply dealt with by Professor Huxley in his opening address, but in support of his view I may quote a short extract from the Report of Messrs. Buckland, Walpole and Young in '78. They say: "The Scotch gannets must consume 37 per cent. more herrings than all the Scotch fishermen catch in their nets."

The Commissioners add: "Whales, porpoises, seals, coal fish, predaceous fish of every description are constantly feeding on them (the herrings) from the moment of their birth. The shoals of herrings in the ocean are always accompanied by flocks of gulls and other sea birds, which are continuously preying upon them, and it seems therefore no exaggeration to conclude that man does not destroy one herring for every fifty destroyed by other enemies." In quoting these opinions I am aware that I am only repeating what has frequently been urged before by those who have advocated unrestricted freedom of fishing. My apology for repetition is that I am often being told that "the sea is over-fished," and am frequently appealed to to use my influence in Parliament in support of various restrictive measures for regulating our Sea Fisheries, and the most effective reply to these statements and demands appears to me to be the conclusions arrived at by competent Commissioners, who have made exhaustive inquiries into the subject. Only the other day I read a most interesting book which I purchased in the Exhibition,

entitled "The Herring, and the Herring Fisheries," by Mr. de Caux. Mr. de Caux is quite at one with me as to the impracticability of establishing a close time, but he proposes to re-enact the provision contained in the 48th of Geo. III., Chap. 110, regulating the size of the mesh of the herring net. Now this question is very exhaustively dealt with by the Commissioners of 1878. They point out that a law regulating the mesh could not be enforced, except by an International Convention, beyond three miles from the shore. A new Convention has just been concluded with Foreign Powers, and a Bill is now before Parliament to give effect to it, but the Convention declined to entertain the question of the mesh.

Another objection to reducing the size of the mesh is that such a regulation would interfere with the sprat and garvie fishing. I may here assume, without raising any controversial point, that sprats and garvies are not young herrings. Sprats and garvies supply a considerable amount of wholesome food, and it would be unfair to prohibit these fishings on the mere chance of increasing the number of herrings.

A further objection is that the cotton nets, now in universal use, are subject to shrinking at every fresh baking, and fishermen might thus unwittingly be led into an infraction of the law. These difficulties to regulating the size of the mesh, combined with the experience we have had of legislative enactments in Scotland, cause me to differ on this point with Mr. de Caux.

The Act which he desires to pass for the English fisheries is still nominally in force in Scotland, but for the reasons I have stated it has been found to be inoperative, and the newly organized Scotch Fishery Board in their first report, issued last month, recommend the repeal of the

section that Mr. de Caux wishes to enforce. They say: "In many cases a net below the standard size is in use; but the fishermen are finding that the small mesh is not profitable, as only the nose of the larger fish gets into it, and unless they get past the gills they are not effectually caught. The matter does not seem to be one suitable for public regulation, and had much better be left to the fishermen themselves. We therefore recommend the repeal of Sec. 12 of 48 Geo. III., Chap. 110."

Legislators received some very wholesome advice from Professor Huxley at the close of his opening address, when he said: "I think that the man who has made the unnecessary law deserves a heavier punishment than the man who breaks it." Now, although some of the laws we have passed to regulate our Herring Fisheries have been harmless, except for bringing the law into contempt, yet this cannot be said of all our restrictive legislation, as the Sea Fisheries Commission of '66 describes the effect of the close time established by Parliament on the West Coast of Scotland, as "reducing the population of some of the Western Islands to misery and starvation, while abundant food was lying in front of their doors, by preventing them taking herrings." Surely Parliament can be better employed than by mischievous legislation, producing such vexatious results.

The statistics I have quoted indicate the general prosperity of the Scotch Herring Fisheries, but this general conclusion must be accepted with some qualification. The Commissioners of 1878 remark that the so-called prosperity is almost entirely due to the extraordinary development of the fisheries off the Aberdeenshire coast; and if the takes between Fraserburgh and Montrose be deducted, the condition of the other fisheries will be found to be much less

satisfactory. Commenting on this, the Commissioners observe that the development of the fisheries on the Aberdeenshire coast has led to the neglect of fisheries at other places, the younger and more vigorous fishermen being attracted to the most productive fishing ground. The destruction of the Wick Harbour has caused many of the boats from that district to fish off the Aberdeenshire coast.

These causes have contributed to the falling off of the fisheries elsewhere. But allowing for these considerations, the Commissioners express an opinion that the vast amount of netting now in use may have scared the fish from narrow waters. They estimate the nets used by the Scotch herring fishers to be sufficient to reach in a continuous line for 12,000 miles, to cover an area of 70 square miles, and to be sufficient to go three times across the Atlantic from Liverpool to New York. The substitution of cotton for hemp nets may be said to have revolutionised the fishery. A boat that used to carry 960 yards of netting, now carries 3,300 yards. The nets used to be 6 or 7 yards, they are now 10 yards deep. They used to present a catching surface of 3,000 square yards, they now present a catching surface of 33,000 square yards; without increasing the weight of the nets to be worked, each boat has increased its catching power fivefold. This vast extent of netting certainly warrants the possibility assumed by the Commissioners, that the nets may have scared the herrings from narrow waters, but looking to the general results, they decline to recommend any restrictive measures, entertaining an opinion that the vast amount of netting has no effect in diminishing the stock of herrings in the sea; a conclusion amply justified by the enormous take of herrings in 1880, two years after the Commissioners' Report. Since then herrings have also returned in greater number to some of

our inshore fisheries. Referring to the west coast, the Fishery Board Report for 1881 mentions that "The best fishing was got in Loch Hourn, where an immense body of herrings remained all the season." It is reasonable to assume that the herrings returned on their own account, and that their movements were made in "blissful ignorance" that the British Parliament had abolished the measures for their special protection.

Another feature of the Scotch Herring Fisheries is the large and continually increasing takes of late years off the Shetland Islands. In 1879 the Shetlanders only cured 8,000 barrels ; in 1880 the number had increased to 48,000 ; in 1881 to 59,586, and in 1882 to 134,000 barrels.

In his opening address Professor Huxley remarked that considering the antiquity and importance of the fishing industry "it is singular that it can hardly be said to have kept pace with the rapid improvement of almost every other branch of industrial occupation in modern times. If we contrast the progress of fishery with that of agriculture, for example, the comparison is not favourable to fishery," and he afterwards observed, "But we are still very far behind scientific agriculture ; and as to the application of machinery and of steam to fishery operations, it may be said that in this country a commencement has been made, but hardly more."

I am not going to question the general accuracy of Professor Huxley's conclusions, yet I think that I have shown that our Scotch Herring Fisheries have not been altogether standing still. The increase in our take of herrings has not been entirely due to the larger amount of capital invested in the trade, nor to the enterprise of our fishermen in going further to sea in pursuit of their calling ; though no doubt these two causes have largely contributed in

raising our fishery to its present importance. But of late years the boats have been very much improved, and the cotton nets, as I have already said, worked almost a revolution in the Herring Fisheries. The effect of these combined causes, better boats and better nets, will at once be appreciated by a reference to a table compiled by Mr. Francis Day (from the Scotch Fishery Board statistics), and published in his notes, giving an account of his cruise in the *Triton* last year.

Mr. Day gives the proportion of barrels of cured herrings to the fishermen employed since 1825 :—

		Fishermen.	Barrels.
5 years, 1825-30	1	8
5 „ 1854-59	1	14
5 „ 1876-81	1	22

One fisherman now produces nearly three times what he did fifty years ago, and the result of his labour will bear favourable comparison with the increased production of the agricultural labourers during that period. I am, however, quite at one with Professor Huxley in believing that our sea fisheries are capable of far greater development, particularly by the application of steam power. On this point, I may be permitted to quote some opinions I expressed in a lecture I gave about two years ago, when I advocated the application of steam power as a means of developing our Herring Fisheries.

What I claim for steam is :—

1. A saving of life by increasing the boat's chance of making a port of safety in bad weather.
2. A certainty of reaching and returning from the fishing ground in all ordinary weather, independent of tides, calms, and head winds.
3. The comparative punctuality thus acquired by

steam would enable arrangements to be made by railways to run fish trains, and so enhance the value of the cargo by the difference between the price of fresh and cured fish.

In the foregoing remarks I have assumed that each boat should be propelled by steam power—an auxiliary screw would be the most suitable. Steam might also be applied to a winch, and would save a deal of manual labour in hauling the nets. Steam tugs, to tow the boats, have been tried with only a moderate degree of success. As a means of saving life by getting the boats into harbour in a storm they are not to be depended on, and at any time might miss the boats during a fog or in a dark night. Steam carriers do not appear to me to be adapted for the herring fisheries. The transshipment of herrings from the present boats to carriers, except in very smooth water, would be attended with great difficulty. How steam can be best utilised in developing our herring fisheries is a question I should be very glad to hear discussed at this Conference. It is one of great and growing importance.

Our first-class boats, annually in some parts of Scotland going further to sea, are too heavy to be propelled by oars ; consequently, in calms or when a tide has to be encountered, the cargo of herrings is frequently spoilt before it reaches the shore. The regulations of the new Fishery Board are framed to facilitate the curing of herrings at sea, but our present boats are not large enough to carry barrels and salt enough for this purpose. Off the coast of Montrose, where I believe our boats often go seventy to eighty miles to sea, I am told that it is now the practice to carry salt enough to sprinkle over the herrings, and thus save them for four or five days ; and I understand that herrings treated in this method, termed “salting in bulk,” are but

slightly depreciated in the market ; but herrings so cured would not be entitled to receive the Government "brand" or mark, the regulation for this purpose requiring that the fish should be cured within twenty-four hours of being caught.

The Government brand, indicating a degree of quality, was first established in 1808, but nothing was charged for it till 1859, when the Government imposed a fee of 4*d.* a barrel to defray the cost of the branding establishment. The amount collected from the fees exceeds the cost of branding by about £3,000 a year, and this surplus is now paid to the Scotch Fishery Board for harbour improvements and other objects to develop the fisheries.

The policy of a Government brand has been the subject of frequent contention among the Scotch curers. The matter was fully discussed so recently before a parliamentary Committee, of which I had the honour to be chairman, that I do not propose to detain you to-day by reopening the question.

The Committee referred to reported in 1881 in favour of the retention of the brand. It was contended by its opponents that the brand had lost its value, but the Committee considered "the continental merchants would not continue to demand branded herrings, and the home curer would not voluntarily pay 4*d.* a barrel for a trade mark which had ceased to be a guarantee of quality." I should mention that the brand is not compulsory ; and if any of the Scotch curers consider they can establish a superior trade mark—and some of them are of opinion that they can—they are at perfect liberty to do so.

The Dutch cure most of their herrings at sea, on board much larger vessels than are generally used by our fishermen, but I should regret to see the adoption of a system

here by which the fish offal was all lost, as it forms an excellent manure, which, by a process shown in the Exhibition, might, I believe, be made still more valuable. The result of the experience obtained at the Menhaden Fishery, detailed by Professor Brown Goode, is instructive, as showing the extent to which fish offal may be advantageously utilised.*

The use of larger boats necessitates increased harbour accommodation, and this is at present the great want of fishermen all along our coast. How it is to be supplied is too large a question for me fully to discuss in this Paper. There can be no doubt, especially after the experience we have had in this Exhibition, of the demand on the part of the public for an abundant supply of cheap fresh fish ; I am not, however, aware to what extent the community is willing to be taxed for the construction of better harbours to facilitate a supply of food so universally appreciated, but without better harbours I believe it will be impossible for

¹ " In 1878 the Menhaden Oil and Guano Industry employed capital to the amount of 2,350,000 dollars, 3,337 men, 64 steamers, 279 sailing vessels, and consumed 777,000,000 of fish. There were 56 factories, which produced 1,392,644 gallons of oil, valued at 450,000 dollars, and 55,154 tons of crude guano, valued at 600,000 dollars ; this was a poor year. In 1874, the number of gallons produced was 3,373,000 ; in 1875, 2,681,000 ; in 1876, 2,992,000 ; in 1877, 2,427,000. In 1878, the total value of manufactured products was 1,050,000 dollars ; in 1874, this was 1,809,000 dollars ; in 1875, 1,582,000 dollars ; in 1876, 1,671,000 dollars ; in 1877, 1,608,000 dollars ; it should be stated that in these reports only four-fifths of the whole number of factories are included. The refuse of the oil factory supplies a material of much value for manures. As a base for nitrogen it enters largely into the composition of most of the manufactured fertilisers. The amount of nitrogen derived from this source in 1875 was estimated to be equivalent to that contained in 60,000,000 lbs. of Peruvian guano, the gold value of which would not have been far from 1,920,000 dollars."—*Professor Brown Goode's Paper at International Fisheries Exhibition.*

the fishermen to meet the growing demands of an increasing population. State aid towards harbour improvement has hitherto been most successful, when given in the form of grants to supplement local efforts, or by loan at a low rate of interest. Under this system, which I should like to see extended, such harbours, and they are miserably inadequate, as are available for our Herring Fisheries, have been mainly constructed. In Scotland generally, the fishermen have shown a commendable spirit of self-reliance by combining together to raise funds for the improvement of their harbours. I have often been astonished at the efforts they have made to enable them to participate in the small grant annually given to the Scotch Fishery Board.

I may mention one instance that lately came under my notice. About two years ago I was visiting a small fishing hamlet on the coast of Banffshire. I was told that the fishermen were most anxious to raise a sum of £3,000, to enable them, by the assistance of the Fishery Board, to improve their harbour. I remarked to a friend who was with me, that there seemed to be nobody but fishermen in the place, and I expressed some doubt as to their ability to raise the required sum. His reply entirely confirmed my estimate of the inhabitants, for he said, "No one here puts on a black coat on the Sabbath except the minister and the general merchant." Yet the amount required, with some assistance from the landlord, was duly raised, and by the aid of the Fishery Board a harbour, which will be of great advantage to the district, is now being constructed. I mention this circumstance because I think the willingness of the fishermen to pay, so far as in their power, for improved harbours, is a consideration which should be taken into account in any general scheme for harbour construction, and also because I think the spirit of self-reliance

evinced by the fishermen entitles them to the sympathy and to the support of the public.

I should like to say a word before concluding this Paper on the distribution of the vast number of herrings taken off the Scotch coast. The Duke of Edinburgh estimates the value of the fish taken by the trawlers off the coast of the United Kingdom at £2,581,000, or about £300,000 more than the value of the herrings taken off the Scotch coast. Cured herrings, representing £1,006,462, were exported in 1881, the value of the other fish exported that year from all parts of the kingdom was only £398,048. It will thus be seen that the distribution of the herrings is very different from that of other fish. I believe a far greater proportion of the Scotch herrings, especially those caught on the west coast, would be consumed as fresh fish at home, if greater facilities were given by the railways for their conveyances.*

The evidence given before the Railway Committee last year, fully exposes the high rates frequently imposed by

¹ "Still more important has been the general adoption of scientific methods of preparation and transportation. Great freezing houses have been built on the Great Lakes, on the Pacific coast, and in the cities of the East, and refrigerator cars are running upon all the trunk lines of railway. Columbia salmon, lake white-fish, cod, bass, Spanish mackerel, and other choice fishes are frozen stiff and packed up in heaps like cordwood, and can be had at any season of the year. Refrigerator cars carry unfrozen fish from sea and lake inland. Smelts and trout, packed in snow in the north, are received in New York by the cartload daily throughout the winter. Halibut are brought from the distant oceanic banks in refrigerators built in the holds of the vessels, and 12,000,000 to 14,000,000 pounds are distributed, packed in ice, to the cities of the interior. Baltimore, from September to April, sends special trains laden with oysters, daily, into the west, and Chesapeake oysters are food for all, not luxuries, even beyond the Mississippi."—*Professor Brown Goode*.

the railway companies for the carriage of fresh fish. A less grasping policy would, I believe, be more remunerative to the railways and certainly more advantageous to the public. But this is a subject which will be more fully discussed in a subsequent Paper by his Excellency Mr. Spencer Walpole.

The conclusion I arrive at is, that the requirements for the further development of our herring fisheries are :—

1. Better harbour accommodation.
2. The application of steam power.
3. Increased railway facilities, and lower railway rates for the distribution of fresh fish.

As my right hon. friend Mr. Shaw-Lefevre, M.P., is to read a Paper on the "Principles of Legislation in connection with Sea Fisheries," I have not alluded to the laws relating to trawling, and other matters for regulating our sea fisheries ; I have only touched on a subject, which I am sure will be more ably dealt with by my right hon. friend, to such an extent as I deemed necessary to make the condition of our herring fisheries intelligible before an International Conference.

Regarding the objects in the Exhibition calculated to develop the herring fisheries, there are models of boats of the most approved build propelled both by steam and sail, nets of the most improved pattern, conspicuously among them being the American purse-seine net, admirably adapted, in the opinion of some competent practical men with whom I inspected it, for the herring fisheries ; there are refrigerating vans, and barrels made by steam machinery.

But more important to my mind than the modern appliances I have referred to for the capture and transit of fish are the conclusions arrived at by the competent autho-

rities who have addressed us at the Conference, viz., that the stock of herrings in the sea, so far as man is concerned, is practically inexhaustible. The opinion expressed by the Playfair Commission in '62, by the Sea Fisheries Commission in '66, by the Herring Fisheries Commission in '78, is confirmed by the exhaustive enquiries of the Duke of Edinburgh, and by the ripe experience of Professor Huxley. Although we cannot account for the mysterious movements of the herring, causing the fluctuation which characterise our fishery, it is at least some consolation to know on the high authorities I have mentioned, that although advancing civilisation may pollute our rivers and destroy our salmon, we are still likely to enjoy our herring, as the inventive genius of the age has failed to discover any means of depriving us of an ample supply of the most abundant and nutritious food which the bounty of the ocean yields to the labour of man.

DISCUSSION.

The CHAIRMAN said his honourable friend had treated the subject as he had expected he would from the intelligent action which he had taken in Parliament in promoting regulating but not restrictive laws, with regard to sea fisheries. The only reason he presumed why he found himself in the Chair on this occasion was, that in 1862 he was Chairman of the Royal Commission for examining into the herring-fisheries of the British coast. Why he, a Chemical Professor, should be found in that position, he could never fully understand, especially as there was on the Commission a man of European eminence, and of the greatest authority on fisheries: though they both

were in the same galley, and he sat at the helm, it was the vigorous power of his friend, Professor Huxley, who not only impelled the bark, but also directed it. That Commission established one or two facts which certainly had been of the greatest importance to our great fisheries, viz., that restrictive laws framed by man in ignorance of the laws of Nature, were excessively destructive to the interests of fishermen instead of being favourable to them. When they first began to examine this subject, they found different laws prevailing on the east coast of Scotland to those which prevailed on the west. On the east coast there were no restrictive laws, and fishermen were encouraged to catch fish, even full fish containing ova, in order to be cured. Each of these fish had on an average 50,000 eggs, and the enormous number that were taken in this state would seem to indicate a process of extermination ; but the fisheries of the east coast, without restrictive laws, increased, and did not diminish. When they went to the west coast of Scotland, however, in the inner waters of the Firth of Clyde, they found restrictive laws prevailing. For several months no herrings were allowed to be taken, there being a close time for herrings for the purpose of protecting them. As they went further into the open waters at the Firth of Forth and Clyde along the islands up to near the Highlands, those restrictive laws still prevailed ; but there was a relaxation as to the period when the close time should end. A very curious result was made apparent, and a most unexpected one. At the periods of close time, the herrings came to the banks to spawn, and were followed by their natural enemies in great number, among which he might chiefly allude to the cod and the ling, which consumed them in great numbers. There were innumerable fish which lived upon the young

fry and the full-grown herring ; the cod, ling, dog-fish, and conger, fed on the full-grown herring ; while the flat-fish and crabs eat the spawn, and there were innumerable other fish which eat herring-fry. At the time when they found them on their spawning banks, these fish had an appetite for nothing else but herring, and this result followed, that the fishermen of cod and ling could catch nothing, because they would only take herring bait at the time, and the close time prevented the fishermen getting any herring-bait for catching this white fish. The consequence was, that the laws invented for the protection of the herring became laws for their destruction, because their natural enemies, which could not be caught because of the want of bait, multiplied exceedingly, and devoured the very herrings which the laws intended to protect. This was so to an enormous extent, as a little calculation would show. The Commission frequently opened cod and ling and examined the contents of their stomachs, in which they frequently found seven to ten herrings, which they had not begun to digest ; but allowing a diet of two herrings a day to a cod, and allowing him to live seven months in one year, fifty cod would catch as many herrings as one fisherman could catch in a year. Now there was no census of how many cod and ling existed, but there was a census of how many cod and ling were caught ; there were caught and salted last year on the coast of Scotland, 115,513 cwt. of cod and ling. Now about thirty fish went to a hundredweight, and from a little calculation it would follow, that if the cod and ling which were salted had lived in the sea, and had not been taken, they would have caught as many herrings as 69,000 fishermen. Now that was more than 20,000 beyond all the fishermen who existed on those coasts, and, therefore, those laws which protected the enemies of

herrings, kept them in the sea, and produced this enormous loss. That was one of the results of the Commission ; for the laws intended for the protection of herring really multiplied the natural enemies of the herrings enormously, and thus destroyed them infinitely more than they were protected. The action of that was this, that under the protection of these laws, the fish which preyed on the herring increased and multiplied exceedingly, so that they had a very good time ; but the poor fishermen of those coasts had a very bad time, because they could not catch the fish upon which their subsistence depended. The consequence was, that they found these fishermen disobeying the law, when it could not be enforced, or when the law was obeyed, it led to starvation, and they were obliged to emigrate. That was the result of interfering with the laws of nature by an indiscreet law passed by Parliament. The lesson which might be drawn from the interesting paper just read, was that though Parliament might make laws for keeping order and safety amongst fishermen ; that the balance of nature which prevailed in the sea should be left alone, because the balance of animal life depended upon unknown factors. The herrings had for their food small crustaceæ, sometimes microscopic, but at other times little shrimps and sand-eels. They enjoyed that food, and when it existed on the coast, multiplied largely ; but whilst they lived on these things, there were other fish which were living on them, and which had the greatest love for the herrings. They were the conger, the dog-fish, the cod, and the ling, which slew their millions, and there were birds, such as gulls and gannets, which also destroyed multitudes, and then there were the porpoises and grampuses, which ate up whole shoals of herrings. This was the balance of life, one balancing the

other, and the more it was interfered with, the more mischief resulted. Sometimes there was a cry for protective laws, because the herring fishery varied as any other industry varied according to circumstances. They did not always know why it varied. For instance, Mr. Duff spoke about the varying character of the herring, and a very capricious fish was the usual term fishermen applied to it. But the term caprice was merely the mode of concealing our ignorance of its habits. If we knew its habits, and those of its enemies, it would probably be found there was no caprice in the matter. Sometimes herrings came in shoals to particular parts of the coast, and other times they abandoned them for many years. The reason of that was not known. It might be, for instance, that something had happened to the small crustaceæ and the sand-eels on the particular part of the coast, and the herrings did not find their natural food ; it might be that the enemies of the herrings had multiplied very much, and devoured in too large quantities their own subsistences. Then the herrings decreased, but ultimately they increased again, because their enemies having fed too largely upon them, they decreased in number, and then the herrings had their turn again, and so there was a continual scarcity and plenty in the markets, sometimes prosperity and sometimes a panic, and the herring in its action assisted in producing these cases of prosperity and panic, just as if they were Lancashire manufacturers. It was needless, therefore, to make laws to try and prevent man, who was such a very small factor in the result, catching herrings when there were, all round the herrings, enemies creating havoc infinitely greater. If any lesson could be learnt from the interesting paper they had listened to, it was that it would be much better to leave these things to the laws of nature, which were far more

wise in this respect than any laws which were likely to be passed by Parliament.

Dr. FRANCIS DAY did not know whether it was worth while making many remarks on the question if they were told that all legislation was useless, and that whoever said anything on the other side appeared to be one who did not understand the subject upon which he was speaking ; but he thought they were met for the purpose of discussion, to hear both sides of the question, and not to jump to conclusions at the commencement before they had heard what the other side had to say. Personally as yet he gave no opinion on one side or the other, but he did think those who had opinions to offer should be allowed to give them without being told that those who made laws ought to suffer from them themselves instead of the unfortunate fishermen to whom those laws would apply. He could not help thinking that gentlemen who held those views, though they might be very fit for Legislatures, were quite unfit to legislate on fishing matters. It was only necessary to look at the fresh-water fisheries to see how they had been destroyed for want of legislation, and what had been done by making use of legislation. He would, however, pass on to the subject more immediately before them ; he had no intention of making any remarks when he entered the hall, but he had been at two or three conferences when no one had risen to say anything, except the proposers and seconders of resolutions, and he thought it was time that a few observations should be made on the different sides of these important questions. They must all feel exceedingly obliged to Mr. Duff for the figures he had given, but when he left out the natural history of the subject it appeared to him that he left out the most important portion of the question with regard to herring and other fisheries. There

were three different classes of fish from the sea which were mostly made use of by man. There were the herrings, the gregarious form, which were mostly found near the surface, and with them might be classed the mackerel and the pilchard, and then there were the deep sea form of the cod and ling which had been mentioned, the devourers of the herring, and also the ground fishes, such as the turbot, sole, &c. Some people talked about the balance of nature, and said no law should be passed with reference to these fisheries, but the question was whether by passing no laws they were not destroying the balance of nature. They permitted the cod and these voracious fishes to be captured in large quantities, and these were the very fish which, as the Chairman informed them, ate the herring. Might it not be that if, as many fishermen told them (though it was denied on some hands, as far as he had seen, it appeared to be correct), the inshore fisheries were decreasing, the quantity of cod was decreased, and so the fish were destroyed which were catching the herring, and thus the herring might be increasing in consequence of the destruction of the cod fisheries. Then they were told that in consequence of the legislation the poor fishermen suffered on one portion of the coast of Scotland and not on the other, but if they turned to the blue book issued by Messrs. Buckland and Walpole it would be found that although these regulations were in existence they were never carried out; that no regulations ever passed by man had ever had any effect on the herring fisheries. Then they were told that the herrings were inexhaustible. They found the herrings migrating from place to place, and in so doing they disappeared entirely from one country and appeared in another. If the cod fisheries were destroyed and the herrings migrated, where would the fisheries be? He had

seen the oil sardine on the western coast of India for years, and all of a sudden it would entirely disappear and not appear again for several seasons. With regard to the size of the mesh he would not attempt to offer any opinion, seeing there were so many gentlemen present more competent to speak upon it. It appeared to him that if the herrings were driven out from the inshore fisheries into the open sea there was a necessity for larger boats, and if this resulted, and there was not an increase of harbour accommodation, what were the fishermen to do on the eastern coast of Scotland? They must be driven down to the ports or beach their boats, which often caused loss of life. He thought, instead of taking all the facts given in these Royal Commissions for granted, they ought to have them supplemented by further investigation. If investigations were carried on in the way in which they were in the United States, so as to ascertain whether any class of fish were increasing or decreasing, what they fed upon, and what it was which caused their food to increase or decrease, or to migrate, they would then be in a better position to judge as to the necessity for legislation on this subject.

Mr. BRADY (Inspector of Irish Fisheries) said he had listened with great pleasure to the excellent address which had been given, and it was certainly a question of very deep interest whether, as we went on increasing our means of capture, and increasing the amount of food brought up from the ocean, we might not be considered to be killing the goose which laid the golden eggs. He had had the honour on two occasions of mentioning certain facts connected with two bays in Ireland, from which he drew certain conclusions, which, of course, might be incorrect, but those conclusions were that all restrictions on deep-sea fishing

were mischievous, and tended to no good. If he understood aright the observations of the last speaker, he said the regulations in Scotland had no effect on the herring fishery. There had been restrictions, and the Chairman had made some very important observations with regard to them. Dr. Day said they were not enforced, and, therefore, they had no effect. Well, if they found the herring fisheries of Scotland increased in the vast proportions that they had done for so many years, it was the strongest argument that the restrictions placed upon them by the Legislature were of no avail, and did no good. How far, if they had been enforced, they might have done any good, of course no one could say. It was most important that science should be brought to bear on this question, and should be aided by practical experience. When they had arrived at the time when scientific men could say that certain restrictions should be placed on deep-sea fishing, then it would be time for the Legislature to step in, but until that day came it would be only mischievous to cripple the industry of a country by imposing such restrictions in the absence of that knowledge which they all admitted they were deficient in. The great deficiency of statistics had been referred to especially with regard to Ireland, and he regretted very much to say that the statistics of fisheries in Ireland were miserably defective. It was very important that those statistics should be collected, so that they might ascertain whether the improved modes of capture and the greater distance to which the boats went were injurious to the fisheries. Nothing was more interesting to him than something which he had seen in the Exhibition, which might develop the fisheries to an enormous extent. He alluded to a mode adopted on the great lakes in Canada, by which a steamer, while moving on, kept paying out one net, and at the same time hauled

in another. If that could be brought into operation in our sea fisheries it would lead to very important changes.

Mr. MCLELAN (Canada), said that some of the fishing grounds on the great lakes in Canada, where the mode of fishing just referred to was adopted, were 400 or 500 miles long ; and the reports coming from fishermen were, that unrestricted fishing diminished the number of fish even in these large lakes. Application had been made to him repeatedly to permit a smaller sized mesh of net to be used ; but in consequence of the testimony which had come to him from all fishermen, he had refused to allow it. He considered it was a very important question whether sea fisheries were exhaustible or not ; probably the most important question which could be discussed. Previous to coming to England, all the testimony he had received from the fishermen of Canada, both shore fishermen and sea fishermen, was, that on the great lakes, fisheries that had hitherto been very profitable, were being exhausted from over-fishing, and from all he could hear from fishermen all round the coast, he had come to the conclusion that it was possible to exhaust the fisheries of the Dominion of Canada. Mr. Duff had told them that with regard to herrings they first had an open season, in which an average of 500,000 barrels of fish were taken every year ; then for some seventeen years they had a close season, in which there was an average of 600,000 barrels, and then it was made open again, and the average rose to 800,000 barrels. The inference from all this was, that it was better to have free fishing ; but at the same time the honourable gentleman stated that the appliances for catching the herrings had been multiplied fivefold, and it occurred to him that if that were so, they ought to have had three million barrels

of fish instead of 800,000, seeing the appliances had so largely increased. Then the question arose, with these multiplied appliances and the improved boats which had been referred to, was it not the fact that they went further to sea, and were sweeping over a larger area and not getting a proportionate return of fish? This was a point on which the testimony of practical men was needed. Science told them that fish produced so many eggs, and multiplied very fast; that one fish fed on another; and that the balance of nature ought to be preserved; that the little fish had larger fish to eat them; the larger fish had bigger ones to bite them, and so on *ad infinitum*; but they left out of sight a certain kind of fish which preyed on the others, but were not fit for food and therefore were not caught. To keep up the balance of nature they ought to fit out expeditions to destroy those fish which preyed on the edible fish; but if they left them to multiply and prey on the others, and at the same time man went in with his fivefold machines to catch the herrings, the result would be, according to the testimony of Canada, that the fishing grounds would be gradually destroyed. It would simplify things on the other side of the Atlantic very much if it could be settled, by the testimony of fishermen and the investigations of science, that the sea fisheries were inexhaustible; then all they would have to do would be to improve their appliances for catching. Mr. Duff had referred to the want of harbours round the coast, and if he might be permitted to give the experience of a young country, he might say that they had felt the same want in Canada; but there the Government took hold of the matter, considering it of great public importance that the fisheries of the country should be protected, and that suitable harbours should be provided. Year by year large grants were made for the erection of

suitable breakwaters and harbours of refuge, with the most beneficial results. He did not pretend to argue the advisability of this system in a country where it was the State policy for every industry to be left to its own resources ; but in Canada, which might be considered more protective of native industries, that course had been pursued, and fishermen had been protected not only by the providing of harbours, but by the distribution yearly of a quarter of a million of dollars in the encouragement of fisheries.

Mr. RONALD MACDONALD (Aberdeen), said the views of gentlemen from England, Ireland, and Canada had been heard, and as he came from Scotland, where the herring fisheries were more important than in either England or Ireland, he hoped he might be allowed to make a few remarks. He knew a number of Mr. Duff's constituents, who appreciated very much the great intelligence and practical interest he had taken in the development of fishing in Scotland, and he had listened with great pleasure to the comprehensive paper which he had read ; but it could not be expected that everything which might be supposed to be even of essential importance to the subject, could be compressed into so short a paper. On one point there seemed to be a little want of unanimity, namely, the uselessness or otherwise of legislation with regard to fisheries. The views on this subject came from two different quarters, and they differed according to the quarter from which they came. Some years ago he had the opportunity of being present when evidence was laid before the Commission which had been referred to, when Mr. Buckland, Mr. Walpole, and Mr. Young went round on the east and west coasts of Scotland, and he found that all those who were interested in the inshore fishing demanded that there should be restrictions, while those who depended

on the system of fishing which was now so successful, namely, employing bigger boats, bigger nets, more of them, and going out sixty, seventy, or a hundred miles to sea, and catching the herrings before they came into the small bays, these came to the conclusion that it was practically useless, if not mischievous, to make such laws as those who had little boats and depended on fishing in the small inland lakes demanded. He was not prepared to say that the gentlemen from Canada were wrong in saying that it would be perhaps dangerous to do away with restrictions there ; but it must be borne in mind, that large as the Canadian lakes were, they were different from the Atlantic ocean, and whilst restrictions in Canada might be useful, it did not follow that such restrictions would be of any use when dealing with such a large space of water as the Atlantic. There was just one omission in Mr. Duff's comprehensive paper which he should like to bring under the notice of the many eminent men whom he was glad to see were taking a practical interest in this matter. Hardly any reference was made to the fishing on the west coast of Scotland, a comparatively new enterprise, which was carried on in the open sea. There had been for many years from 1,000 to 2,000 boats engaged in that way, not in the Loch Earne, not in the Firth of Clyde, but out from the outer Hebrides into the Atlantic. They began to get fish there on the 24th of May, and continued up to the present time, and a very large quantity was caught there. The facilities for sending it to market, however, were very bad indeed. One fact would show the extent of that fishing industry. In a Parliamentary paper submitted to the House of Commons not long ago, it appeared that from the railway station at Oban, three times as much fish was despatched as from any other station. Upwards of 12,000

tons of herrings were sent from that station, whilst the total quantity sent on the whole Caledonian railway system, including all the towns from Aberdeen to Montrose, was only about 25,000 tons. He hoped, therefore, that some account would be taken of this newly developed fishery out in the Atlantic, by boats coming from Montrose, Fraserburgh, and all the north-eastern points to Stornoway. There was no telegraphic communication of any kind, and the people were put to a very great inconvenience in consequence of having no facilities for sending their fish to market, or getting salt or anything else when they had a large supply of fish.

Mr. JOHNSON (Montrose) said he was one of the jury to examine the salmon nets and fixed nets, and whilst examining these nets he had been very much interested in the exhibits from foreign countries. For many years they had been fishing with the same nets with very little improvement except, as Mr. Duff had said, that they had substituted cotton for hemp, and had made, what they called in Scotland "clipper nets." The first thing which the jury discussed was the steamer on the Canadian lakes, which had been already referred to. It was the first thing which took his attention and had riveted it ever since, and he had wondered whether it could be adapted for herring fishing. It could be seen in the Canadian department, and was shooting a net over the stern and was hauling one in at the bow at the same time. He did not expect that that would ever be carried out in the herring fishery, but he thought it came nearest to anything he had ever seen for doing what appeared very desirable, viz., having some mechanical means of reeling up the nets. The only difficulty which he saw in the way was in reeling up the herring nets to get clear of the buoys that buoyed it up. So impressed was he with the adaptability of that steamer

that he was quite prepared, with the sanction of the Executive Committee, on behalf of his firm in Montrose, to offer a prize to any one who should adopt that system and make it workable for the east coast herring fishery. The next thing he noticed was the purse seine. He understood that was largely used in America, and he thought if it were brought into use in the herring fishery it would revolutionise the trade to a large extent. If they could get these nets to work on these large steamers they could soon bring them into port. For some years past when the boats had been going longer distances, instead of coming in in twenty-four hours they were sometimes three days; and he recollected on one Sunday morning about £500 worth of herrings had to be carted direct to the manure heap because they had been three days in the boat instead of one. He should also be glad to give a premium in connection with the purse seine if it could be made available for herring fishing. The only other matter he would speak about was a cod net which was entirely new to him but which was exhibited in the Norwegian, Swedish, and Canadian sections. The nets of Norway and Sweden were what would be called gill nets, or hung nets, sinking to the bottom. He had never heard of a cod in Scotland or England being caught in any net except the trawl. He should like, if possible, to bring these three nets and the steamer before the fishermen of the United Kingdom, and would suggest that it would be very valuable if some of the illustrated newspapers would give drawings of the net and as much explanation about them as their friends from those countries would be willing to impart.

Mr. WILMOT (Canadian Commissioner), having heard the Canadian name mentioned conspicuously in regard to a particular description of net, wished to say a word upon it. He was not going to discuss the question of herring

fisheries to any great extent, but merely to state, as he did on a former occasion, that if herrings were caught in such vast numbers as it was proposed to do by these machines it must more or less affect all other fish inshore. The herring was the principal food of a large class of fish, and if they were destroyed to such an extent by these improved machines and all the ingenuity which man could bring to bear, not only would the herring be exterminated, but it would very seriously affect the other fish which fed upon them. He regretted very much to find that the system pursued in Canada was now being taken hold of so readily by gentlemen from Scotland for the destruction of these poor innocent fish. These things were sent over merely to illustrate the mode by which fish were sometimes caught in Canada, and it was being taken hold of to exterminate, to a greater extent than was now done, the class of fish which in Canada they were desirous of protecting. The herring of Canada was a different fish from the herring of the sea ; it was a salmonoid very much superior to the herring of the sea, and at one time existed in vast abundance in the inland lakes of Canada. In some of those lakes there were now no herrings left at all, and the consequence was there were no salmon, no salmon trout, and none of the many species of fish which feed on those herrings. If this could be done in a short period of time in the great inland seas of Canada, the same results would follow here if these destructive engines were adopted, and no protection given to the fish. The food of the larger fish must not be destroyed if they were to be retained. The Almighty had made all things wisely ; He caused the herring to multiply beyond almost any other fish, because it was fed upon more largely than any other description, consequently the herring must produce a greater number to keep up their kind, and if they went on inventing engines, and using every effort to destroy

the smaller fish simply because he was small, the result would be to exterminate the larger ones. However he would not speak at any length on this subject, because he anticipated it would come up for discussion later. He rose to thank his friends who had thought proper to draw attention to the superior modes of fishing to a certain extent pursued in Canada, and to warn them not to use it very largely, for fear that if they did, they would destroy the vast supplies of herrings in the sea, and as a consequence the larger and better description of fish also.

Earl DUCIE then proposed a vote of thanks to Mr. Duff for the paper he had read, which was very valuable, not only in itself, but for having produced what one of the speakers had called a want of unanimity, which he considered to be one of the most valuable features of the discussion. Mr. Duff had treated of the history of the herring during the present century, but he remembered in the course of the discussion that he had read in Gibbon, who, when treating of one of the early eruptions of the barbarians in the early Christian ages, and describing the effects that it had on Europe, told them that it had even interfered with the herring trade on the coast of the North Sea, and he would commend that remark to the investigation of anybody who proposed to write the history of the herring.

Sir GEORGE CAMPBELL seconded the motion. He said in these days of division of labour, however talented a man might be, he never was so effective as he might be, unless he devoted himself specially to one subject. That was what his friend Mr. Duff had done, and he had done so with good effect. He showed, in his own person, that a good sailor and a good fisherman was likely to make a good member of Her Majesty's Government, and so he was heartily welcomed in the function which he fulfilled in the

House of Commons. He had not only given a deal of useful information, but had given rise to a very interesting discussion. These were days in which Radicals were found attacking our oldest institutions ; next to the Bible, he thought nothing was so firmly fixed on the Englishman as the old proverb that there were as good fish in the sea as ever came out of it, but even that had been questioned to-day, and had led to a very lively discussion. He did not pretend to say which side was right ; he would only observe, as another speaker had done, that there might be two sides to this question, as regarded the deep sea and the inland waters. His attention was especially called to that from the observation of Mr. Wilmot, from which it appeared that the American herring was totally different from our herrings ; but the discussion had been with regard to the European herring, and he thought there was a great deal of weight in the arguments and the facts stated by Mr. Duff.

The motion having been passed unanimously,

Mr. DUFF, M.P., in reply, said he had been very glad to have aroused such an interesting discussion. He would not enter into the question at any length, but he might be permitted to recall to the recollection of the audience a distinction drawn by Professor Huxley in his opening address. He said there were two kinds of fishing, fresh-water fishing and salt-water fishing, and while it could be shown that you could over-fish and destroy fish in fresh water, there was nothing to prove that salt-water fish were exhaustible. This had a bearing on the remarks made by Mr. MacLellan and Mr. Wilmot, because both those gentlemen's observations had reference to the fresh-water fishing and the lake fishing. Dr. Day, who spoke of sea fisheries, did not quite go the length of saying what they were to do. He rather criticised his observations, without putting

forward any alternative scheme. He did not think it was possible for man to destroy the fish in the sea. That point was very shortly and ably put in a lecture which Professor Huxley gave at Norwich. He said there were a number of enemies of the herring : the cod fish, birds, and everything else we have heard of, and if man took so many herrings out of the sea, it was a sort of co-operative society, those others herring fisheries getting so much less ; but as for any idea of destroying deep sea fisheries, from the knowledge we possessed he was diametrically opposed to the opinion expressed by Dr. Day and some other gentlemen, and he believed that more investigation would only show that it was absolutely impossible. Still, he admitted it was a subject which ought to be discussed, and he was glad to hear their opinion upon it. He did not think it was possible to supply the markets now by simple inshore fishing, and while he admitted that to some extent those fisheries might be injured, much more harm was done to fisheries in general by trying to protect them, than any good which might be supposed to be effected by increasing the inshore fisheries. It was true that restrictive legislation had not been put in force in all cases, but both the chairman and himself had alluded to the very great mischief which was done on the west coast of Scotland, for the population of the western islands were reduced almost to starvation by laws which did absolutely no good to the fisheries. The Executive Committee would pay every attention to the suggestion made by Mr. Johnson with reference to bringing the matters he mentioned more fully before the public. In conclusion, he begged to propose a vote of thanks to the Chairman, who, he was glad to think, as a scientific authority, as well as a man of practical knowledge, entirely agreed with him on the controverted question which had been raised.

